CBCS SCHEME

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15CS62

Sixth Semester B.E. Degree Examination, Feb./Mar. 2022
Computer Graphics and Visualization

Time: 3 hrs. Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. What is computer graphics? Briefly explain the applications of computer graphics. **(06 Marks)**

b. With the help of code snippets, explain the OpenGL point function and OpenGL line function. **(04 Marks)**

c. What is DDA? What are the disadvantages of DDA algorithm? **(06 Marks)**

OR

2 a. Explain the working principle of Raster Scan Systems. **(08 Marks)**

b. Digitize a Line from (20, 10) to (30, 18) on a raster screen using Bresenham's straight line algorithm. **(08 Marks)**

Module-2

3 a. How to identify the concave polygons? Give the different methods for splitting a concave polygon. Explain with an example. **(10 Marks)**

b. Develop a OpenGL program to rotate a triangle about 45° having a vortices A(10, 10), B(60, 10) and C(35, 35) about a fixed point using OpenGL functions. **(06 Marks)**

OR

4 a. Discuss on basic two-dimensional geometric transformation. **(12 Marks)**

b. Define Reflection. Give the matrices for Reflections. **(04 Marks)**

Module-3

5 a. Explain Cohen-Sutherland Line clipping algorithm with an example. **(06 Marks)**

b. Write an OpenGL program to draw a color cube and spin it using OpenGL functions. **(10 Marks)**

OR

6 a. Briefly explain the different types of Light Sources. **(06 Marks)**

b. What is RGB Color Model? How it is represented? **(04 Marks)**

c. What are basic illumination models? Briefly, explain Phong illumination model. **(06 Marks)**

Module-4

7 a. Explain how clipping window and orthogonal projection view volume are determined. Give normalization transformation matrix for an orthogonal projection. **(10 Marks)**

b. Explain in detail about depth-buffer algorithm for visible surface detection. **(06 Marks)**

OR

8 a. Briefly explain the concept of symmetric perpective projection frustum. **(10 Marks)**
b. Write the code snippets for Depth-Buffer functions and Depth-Curing function. **(06 Marks)**

Module-5

9 a. Discuss the request mode, sample mode and event mode, with the figure wherever required. **(10 Marks)**
b. Explain in detail about Bezier Spline Curves. **(06 Marks)**

OR

10 a. How pop-up menus are created using GLUT? Illustrate with an example. **(10 Marks)**
b. Write a short note on quadric surfaces. **(06 Marks)**

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